

CLAIMS

1. A massage device for massaging a body part of a person in an unsupervised and unattended setting, said massage device comprising:
5 a garment for enclosing the body part, the garment having a plurality of bladders arranged along the garment to massage the body part; and
an inflation assembly which supplies fluid pressure to each of the bladders to inflate the respective bladders;

10 wherein each of the bladders has approximately the same inflated volume thereby equalizing the inflation volume of the respective bladders whereby substantially even inflation timing, with substantially even applied pressure, and, thus, overall smooth massage dynamics may be provided without overly complicated inflation fluid control.

15 2. A massage device for massaging a body part of a person in an unsupervised and unattended setting, said massage device comprising:
a garment for enclosing the body part, the garment having a plurality of bladders arranged along the garment to massage the body part; and
an inflation assembly which supplies fluid pressure to each of the bladders
20 to inflate the respective bladders;

25 wherein the garment is shaped to accommodate the lower leg portion of the user's body, wherein bottom bladders massage the user's foot and top bladders massage the user's calf, and wherein the sheets include a notch on each lateral side separating the bottom bladders from the top bladders whereby the garment may provide a snug fit to user.

3. A massage device for massaging a body part of a person in an unsupervised and unattended setting, said massage device comprising:
a garment for enclosing the body part, the garment having a plurality of
30 bladders arranged along the garment to massage the body part; and
an inflation assembly which supplies fluid pressure to each of the bladders to inflate the respective bladders;

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wherein the garment includes a pocket having an opening communicating with the respective bladders and wherein the inflation assembly including a source of inflation fluid and tubing extending from this source into the pocket.

5 4. A massage device for massaging a body part of a person in an unsupervised and unattended setting, said massage device comprising:

 a garment for enclosing the body part, the garment having a plurality of bladders arranged along the garment to massage the body part; and

 an inflation assembly which supplies fluid pressure to each of the bladders to inflate the respective bladders;

 wherein the garment includes a loop fastening strip and a complimentary hook fastening strip which, when engaged with each other, form a hook-and-loop attachment;

 wherein the loop fastening strip is secured to the inner sheet and the hook fastening strip is secured to the outer sheet;

 wherein the loop fastening strips is secured to the inner sheet laterally inward from pull handles and over and laterally beyond a tubing pocket and wherein the hook fastening strip is secured to the outer sheet adjacent its longitudinal edge.

20 5. A massage device for massaging a body part of a person in an unsupervised and unattended setting, said massage device comprising:

 a garment for enclosing the body part, the garment having a plurality of bladders arranged along the garment to massage the body part; and

25 an inflation assembly which supplies a substantially constant inflation capacity to each of the bladders.

 6. A massage device for massaging a body part of a person in an unsupervised and unattended setting, said massage device comprising:

30 a garment for enclosing the body part, the garment having a plurality of bladders arranged along the garment to massage the body part; and

 an inflation assembly which selectively inflates and deflates the bladders;

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wherein, during deflation of the bladders, the inflation fluid flows through exhaust lines and wherein at least some of the exhaust lines include a throttling device.

5 7. A massage device for massaging a body part of a person in an unsupervised and unattended setting, said massage device comprising:
 a garment for enclosing the body part, the garment having a plurality of bladders arranged along the garment to massage the body part; and
 an inflation assembly which selectively inflates and deflates the bladders;
 wherein inflation of a bladder is underway prior to complete deflation of the previously inflated bladder.

15 8. A massage device for massaging a body part of a person in an unsupervised and unattended setting, said massage device comprising:
 a garment for enclosing the body part, the garment having a plurality of bladders arranged along the garment to massage the body part; and
 an inflation assembly which selectively inflates and deflates the bladders;
 wherein the inflation assembly includes a zone selector which allows a user to select a certain zone of the garment.

20 9. A massage device as set forth in claim 1, wherein the garment is made of two opposing sheets and wherein seams between the sheets define the bladders.

25 10. A massage device as set forth in claim 9, wherein necking seams are positioned relative to certain bladders to provide at least some of the bladders with approximately the same inflated volume.

30 11. A massage device as set forth in claim 10, wherein decreased volume in the necked bladder(s) is accomplished without decreasing the sensation of the necked bladder(s).

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12. A massage device as set forth in claim 10, wherein the necked shape of each of the bladders does not substantially change the original, overall, shape of the unnecked bladder so that substantially the same massage sensation is delivered.

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13. A massage device as set forth in claim 12, wherein the necked shape and unnecked shape of the bladders is substantially rectangular.

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14. A massage device as set forth in claim 12, wherein the garment is shaped to accommodate the lower leg portion of the user's body, and wherein top bladders circumscribing the user's calf are necked and the bottom bladders circumscribing the user's foot are unnecked.

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15. A massage device as set forth in claim 14, wherein the garment includes twelve bladders, wherein four of these bladders massage the user's foot and eight of these bladders massage the user's calf.

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16. A massage device as set forth in claim 9, wherein the garment comprises two opposing sheets made of a material which is lightweight, durable and easily cleanable.

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17. A massage device as set forth in claim 16, wherein the sheets are made of urethane film.

18. A massage device as set forth in claim 17, wherein the outer sheet is urethane film supported on a laminate and wherein the inner sheet is unsupported urethane film.

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19. A massage device as set forth in claim 1, wherein the garment is shaped to accommodate the lower leg portion of a user, wherein the garment comprises sheets with seams therebetween to define the bladders and wherein the sheets have an opening for receipt of the user's heel.

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20. A massage device as set forth in claim 1, wherein the garment is shaped to accommodate the lower leg portion of the user's body, wherein bottom bladders massage the user's foot and top bladders massage the user's calf, and wherein the sheets include a notch on each lateral side separating the bottom bladders from the top bladders.

21. A massage device as set forth in claim 1, wherein the garment includes a pocket having opening communicating with the respective bladders and wherein the inflation assembly including a source of inflation fluid and tubing extending from this source into the pocket.

22. A massage device as set forth in claim 21, wherein the garment is shaped to accommodate the lower leg portion of the user's body, wherein bottom bladders massage the user's foot and top bladders massage the user's calf, wherein the sheets include a notch on each lateral side separating the bottom bladders from the top bladders, and wherein the pocket includes slots adjacent the notch to provide an entry passage for the tubing into the top and bottom portions of the pocket.

23. A massage device as set forth in claim 1, wherein the garment includes a loop fastening strip and a complimentary hook fastening strip which, when engaged with each other, form a hook-and-loop attachment.

24. A massage device as set forth in claim 23, wherein the loop fastening strip is secured to the inner sheet and the hook fastening strip is secured to the outer sheet.

25. A massage device as set forth in claim 24, wherein the loop fastening strips is secured to the inner sheet laterally inward from pull handles and over and laterally beyond a tubing pocket and wherein the hook fastening strip is secured to the outer sheet adjacent its longitudinal edge.

26. A massage device as set forth in claim 2, wherein the garment comprises sheets with seams therebetween to define the bladders and wherein the sheets have an opening for receipt of the user's heel.

27. A massage device as set forth in claim 26, wherein the garment includes a pocket having an opening communicating with the respective bladders and wherein the inflation assembly including a source of inflation fluid and tubing extending from this source into the pocket.

28. A massage device as set forth in claim 27, wherein the sheets include a notch on each lateral side separating the bottom bladders from the top bladders, and wherein the pocket includes slots adjacent the notch to provide an entry passage for the tubing into the top and bottom portions of the pocket.

29. A massage device as set forth in claim 28, wherein the garment includes a loop fastening strip and a complimentary hook fastening strip which, when engaged with each other, form a hook-and-loop attachment.

30. A massage device as set forth in claim 29, wherein the loop fastening strips is secured to the inner sheet laterally inward from pull handles and over and laterally beyond a tubing pocket and wherein the hook fastening strip is secured to the outer sheet adjacent its longitudinal edge.

31. A massage device as set forth in claim 30, wherein the loop fastening strips is secured to the inner sheet laterally inward from pull handles and over and laterally beyond the tubing pocket and wherein the hook fastening strip is secured to the outer sheet adjacent its longitudinal edge.

32. A massage device as set forth in claim 3, wherein the garment is shaped to accommodate the lower leg portion of the user's body, wherein bottom bladders massage the user's foot and top bladders massage the user's calf, wherein the sheets include a notch on each lateral side separating the bottom

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bladders from the top bladders, and wherein the pocket includes slots adjacent the notch to provide an entry passage for the tubing into the top and bottom portions of the pocket.

5 33. A massage device as set forth in claim 32, wherein the garment includes a loop fastening strip and a complimentary hook fastening strip which, when engaged with each other, form a hook-and-loop attachment.

10 34. A massage device as set forth in claim 33, wherein the loop fastening strip is secured to the inner sheet and the hook fastening strip is secured to the outer sheet.

15 35. A massage device as set forth in claim 34, wherein the loop fastening strips is secured to the inner sheet laterally inward from pull handles and over and laterally beyond a tubing pocket and wherein the hook fastening strip is secured to the outer sheet adjacent its longitudinal edge.

20 36. A massage device as set forth in claim 5, wherein each of the bladders has approximately the same inflated volume thereby equalizing the inflation volume of the respective bladders whereby substantially even inflation timing, with substantially even applied pressure, and, thus, overall smooth massage dynamics may be provided without overly complicated inflation fluid control.

25 37. A massage device as set forth in claim 36, wherein necking seams are positioned relative to at least some of the bladders to provide each of the bladders with approximately the same inflated volume.

30 38. A massage device as set forth in claim 37, wherein decreased volume in the necked bladder(s) is accomplished without decreasing the sensation of the necked bladder(s).

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39. A massage device as set forth in claim 38, wherein the necked shape of each of the bladders does not substantially change the original, overall, shape of the unnecked bladder so that substantially the same massage sensation is delivered.

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40. A massage device as set forth in claim 39, wherein the necked shape and unnecked shape of the bladders is substantially rectangular.

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41. A massage device as set forth in claim 40, wherein the garment is shaped to accommodate the lower leg portion of the user's body, and wherein top bladders circumscribing the user's calf are necked and the bottom bladders circumscribing the user's foot are unnecked.

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42. A massage device as set forth in claim 41, wherein the garment includes twelve bladders, wherein four of these bladders massage the user's foot and eight of these bladders massage the user's calf.

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43. A massage device as set forth in claim 5, wherein the inflation assembly includes fluid-providing components, fluid-distributing components, control components, protection components, a display panel, and a power supply.

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44. A massage device as set forth in claim 43, wherein the components of the inflation assembly are contained within a housing which is sized and shaped to be compatible with in-home use of the massage device.

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45. A massage device as set forth in claim 44, wherein the fluid-providing components include a compressor, the fluid-distributing components includes a manifold and valves, and the control components comprise a micro-controller, a user input interface, and valve drivers, and wherein the compressor provides a flow of inflation fluid to the manifold, the valve drivers open/close the

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valves so that the fluid within the manifold flows through the appropriate valve and to the appropriate bladder in the garment.

5 46. A massage device as set forth in claim 45, wherein the valves are solenoid valves and wherein the valve drivers activate/deactivate the solenoids to open/close the valves.

10 47. A massage device as set forth in claim 46, wherein the protection components comprise an inaccessible and tamper proof pressure relief valve that limits the maximum pressure that can be developed and therefore delivered to the garment.

15 48. A massage device as set forth in claim 47, wherein the protection components comprise an audio and/or visual alert which alerts the user of the end of the massage session.

20 49. A massage device as set forth in claim 48, wherein, during deflation of the bladders, the inflation fluid flows through exhaust lines and wherein at least some of the exhaust lines include a throttling device.

25 50. A massage device as set forth in claim 49, wherein the throttling rate varies between respective bladders.

30 51. A massage device as set forth in claim 49, wherein tubing extends from the respective solenoid valve to the corresponding bladder and wherein the exhaust lines extend from the solenoid valve.

52. A massage device as set forth in claim 51, wherein the garment includes a pocket having an opening communicating with the respective bladders and wherein tubing extends into the pocket.

53. A massage device as set forth in claim 52, wherein the garment is shaped to accommodate the lower leg portion of the user's body, wherein bottom

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bladders massage the user's foot and top bladders massage the user's calf, wherein the sheets include a notch on each lateral side separating the bottom bladders from the top bladders, and wherein the pocket includes slots adjacent the notch to provide an entry passage for the tubing into the top and bottom portions of the pocket.

54. The massage device as set forth in claim 45, wherein the drivers are controlled by the micro-controller based on input through the user input interface and wherein the micro-controller is programmed to inflate the garment bladders in such a manner that there is smooth transition from one bladder to the next during the massage process.

55. The massage device as set forth in claim 54, wherein inflation of a bladder is underway prior to complete deflation of the previously inflated bladder.

56. The massage device as set forth in claim 55, wherein the deflation of the bladders is throttled.

57. The massage device as set forth in claim 54, wherein inflation of a bladder is delayed until complete deflation of the previously inflated bladder.

58. The massage device as set forth in claim 45, wherein the user display and the user input are incorporated into a display panel.

59. The massage device as set forth in claim 58, wherein the display panel includes a zone selector which, via the user input interface, allows a user to select a certain zone of the garment.

60. A massage device as set forth in claim 59, wherein the zones are preset.

61. A massage device as set forth in claim 59, wherein the garment is shaped to accommodate the lower leg portion of the user's body, wherein bottom bladders massage the user's foot and top bladders massage the user's calf, and wherein the bottom bladders are grouped as a first foot zone.

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62. A massage device as set forth in claim 61, wherein the top bladders are grouped in a second lower calf zone and a third upper calf zone.

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63. A massage device as set forth in claim 58, wherein the display panel includes an intensity selector which allows a user to input a setting in the range of the interrelation between speed and pressure and this input is provided, via the interface, to the micro-controller to appropriately control the drivers.

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64. A massage device as set forth in claim 58, wherein the display panel additionally includes a time selector for choosing a time period for a massage session and this input is provided, via the interface, to the micro-controller.

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65. A massage device as set forth in claim 6, wherein the throttling rate varies between respective bladders.

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66. A massage device as set forth in claim 65, wherein the inflation assembly includes fluid-providing components, fluid-distributing components, control components, protection components, a display panel, and a power supply.

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67. A massage device as set forth in claim 66, wherein the components of the inflation assembly are contained within a housing which is sized and shaped to be compatible with in-home use of the massage device.

68. A massage device as set forth in claim 67, wherein the fluid-providing components include a compressor, the fluid-distributing components

includes a manifold and valves, and the control components comprise a micro-controller, a user input interface, and valve drivers, and wherein the compressor provides a flow of inflation fluid to the manifold, the drivers open/close the valves so that the fluid within the manifold flows through the appropriate valve and to the appropriate bladder in the garment.

69. A message device as set forth in claim 68, wherein the valves are solenoid valves and wherein the valve drivers activate/deactivate the solenoids to open/close the valves.

70. A message device as set forth in claim 69, wherein tubing extends from the respective valve to the corresponding bladder and wherein the exhaust lines extend from the valve.

71. The message device as set forth in claim 7, wherein the deflation of the bladders is throttled.

72. A message device as set forth in claim 7, wherein the inflation assembly includes fluid-providing components, fluid-distributing components, control components, protection components, a display panel, and a power supply.

73. A message device as set forth in claim 72, wherein the components of the inflation assembly are contained within a housing which is sized and shaped to be compatible with in-home use of the message device.

74. A message device as set forth in claim 73, wherein the fluid-providing components include a compressor, the fluid-distributing components includes a manifold and valves, and the control components comprise a microcontroller, a user input interface, and valve drivers, and wherein the compressor provides a flow of inflation fluid to the manifold, the drivers

open/close the valves so that the fluid within the manifold flows through the appropriate valve and to the appropriate bladder in the garment.

5 75. A massage device as set forth in claim 74, wherein the valves are solenoid valves and wherein the valve drivers activate/deactivate the solenoids to open/close the valves.

10 76. The massage device as set forth in claim 75, wherein the drivers are controlled by the micro-controller based on input through the user input interface and wherein the micro-controller is programmed to inflate the garment bladders in such a manner that the inflation of a bladder is underway prior to complete deflation of the previously inflated bladder.

15 77. A massage device as set forth in claim 8, wherein the zones are preset.

20 78. A massage device as set forth in claim 8, wherein the garment is shaped to accommodate the lower leg portion of the user's body, wherein bottom bladders massage the user's foot and top bladders massage the user's calf, and wherein the bottom bladders are grouped as a first foot zone.

79. A massage device as set forth in claim 78, wherein the top bladders are grouped in a second lower calf zone and a third upper calf zone.

25 80. A massage device as set forth in claim 8, wherein the inflation assembly includes fluid-providing components, fluid-distributing components, control components, protection components, a display panel, and wherein these components are contained within a housing which is sized and shaped to be compatible with in-home use of the massage device.

30 81. A massage device as set forth in claim 80, wherein the fluid-providing components include a compressor, the fluid-distributing components

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includes a manifold and valves, and the control components comprise a micro-controller, a user input interface, and valve drivers, and wherein the compressor provides a flow of inflation fluid to the manifold, the drivers open/close the valves so that the fluid within the manifold flows through the appropriate valve and to the appropriate bladder in the garment.

82. A message device as set forth in claim 81, wherein the valves are solenoid valves and wherein the valve drivers activate/deactivate the solenoids to open/close the valves.

83. The message device as set forth in claim 82, wherein the user display and the user input are incorporated into a display panel.

84. The message device as set forth in claim 83, wherein the display panel includes the zone selector.

85. A message device for massaging a body part of a person in an unsupervised and unattended setting, said message device comprising:

a garment for enclosing the body part, the garment having a plurality of bladders arranged along the garment to massage the body part; and

an inflation assembly which selectively inflates and deflates the bladders;

wherein the inflation assembly includes a hold input which, upon activation by the user, provides inflation fluid to at least one selected bladder thereby providing concentrated action on a particularly tense portion of the user's body.

86. A message device as set forth in claim 85, wherein the inflation assembly provides, upon activation of the hold input, inflation fluid to a selected group of bladders.

87. A massage device as set forth in claim 85, wherein the inflation assembly provides, upon activation of the hold input, continuous pressure to the selected bladder(s).

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88. A massage device as set forth in claim 85, wherein the inflation assembly provides, upon activation of the hold input, continuous pulsating pressure to the selected bladder(s).

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